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ABSTRACT

A study examined geography texts to evaluate their adequacy for meeting the diverse needs of students and to recommend modifications that will address specific deficits. Four geography textbooks were selected based on consultations with publishers, teachers, and school administrators to be representative of geography textbooks adopted in the United States. One chapter from each text that related to China, India, Philippines, Russia, and West Indies was selected and one lesson from each chapter was scrutinized. Evaluation forms were designed, definitional criteria were devised for evaluating geography instruction in each textbook, and four education doctoral students were trained to read and evaluate the texts using the form. Only one text included all the instructional elements examined. None of the instructional elements was present in all the lessons examined. It seems clear that these texts would pose a significant challenge for students who enter middle school with reading skills below grade level or for students who speak English as a second language. Although the textbooks are intended for middle school students, readability is around tenth-grade level. Only one text provided specific suggestions for accommodating diverse learners. Textbooks varied in the extent to which they prompted students to engage in complex thinking associated with geography, a domain in which many problems are ill-structured. Texts were dense with facts but contained few concepts or principles, and students were asked to reiterate or summarize information more often than they were asked to illustrate, predict, evaluate, or apply information. Textbooks analyzed provided little support for teaching complex thinking or employing effective teaching strategies. Contains 4 tables of data and 12 references. (BT)

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An Analysis of Four Middle School Geography Textbooks: Meeting the Needs of Students with Learning Problems

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In the last decade, public schools have embarked on an unprecedented course of reform. All states in the United States have developed new content standards in one or more subject matter areas including the four core academic areas of mathematics, science, social studies, and language arts (Council of Great City Schools, 1996; Gandel, 1997; McDonnell et al, 1997). Curriculum is at the center of this reform movement as the new content standards shape the scope, sequence, and format of what is taught in classrooms. Although curriculum involves a wide range of materials, in many classrooms, curriculum is operationalized in the form of textbooks. Indeed, textbooks dominate instruction in elementary and secondary schools.

Standards-based school reform and curriculum revisions are being undertaken at a time when classrooms are more diverse than at any other time in the history of public schooling. At the same time, there is the explicit expectation in policy and legislative statements at both the state and national levels, that standards-based reform pertains to *all* students. For example, the 1997 reauthorization of the Individuals with Disabilities Act (IDEA-97) contains explicit language that students who have disabilities are expected to participate in district and state testing. Clearly, the goal of understanding textual information extends to all students, including those with special needs.

However, traditional textbooks do not necessarily promote understanding. Neither do textbook adoption committees serve to remediate this issue. Rarely are pedagogy and educational research considered by state and local textbook adoption committees when judging the quality of texts (Courtland, Farr, Harris, Tarr, & Treece, 1983; Powell, 1986). Instead, efforts on the part of state adoption committees to provide a standardized state curriculum usually result in curriculum uniformity that is achieved at the expense of minimizing the ability to meet diverse student needs (Tulley & Farr, 1985).

Given that textbooks account for about 75 to 90 percent of what goes on in classroom instruction (Tyson & Woodward, 1989), and in turn, impact upon student learning, examination of these texts has relevance for all students, not just students with learning disabilities. The purpose of this study was to examine geography texts with the intent to evaluate their adequacy for meeting the diverse needs of students and to recommend modifications that will address the specific deficits.

Method

Materials

Four geography textbooks, Glencoe (Boehm, Armstrong, & Hunkins, 1996), Holt Rinehart and Winston (Helgren & Sager, 1995), Prentice Hall (Baerwald & Fraser, 1995), and Silver Burdett and Ginn (Ainsley, Bass, Cooper et al., 1995) were evaluated. These textbooks were selected based on consultations with publishers, teachers, and school administrators to be representative of geography textbooks typically adopted in the United States. We selected one chapter from each of the four textbooks that related to China, India, Philippines, Russia, and West Indies and scrutinized one lesson

from each chapter. These five countries were chosen, because they allow for a sampling across a range of textbooks.

Procedures

We designed a Geography Textbook Evaluation Form described in the following section and devised definitional criteria to use in evaluating geography instruction in the four textbooks. Four doctoral students in education were trained to read an entire lesson in the specified chapter and evaluate the texts using the evaluation form.

Knowledge Forms and Intellectual Operations.

Analysis of the format and use of information contained in the lessons followed generally from Gagne's types of learning outcomes (1985) and Bloom's taxonomy of instructional objectives (Bloom et al, 1958). The taxonomy used in the present study was adapted from one developed by Roid and Haladyna (1984) in which operational definitions are formulated for facts, concepts, and principles and for use of information through reiteration, summarization, illustration, prediction, evaluation, and application. To evaluate knowledge forms, we read each lesson in its entirety and tallied the number of facts, concepts, and principles presented using explicit definitions. Next, we identified all questions presented in the lesson to determine the type and number of intellectual operations (e.g., reiteration, summarization, illustration, prediction, application, and evaluation) (Tindal & Marston, 1990).

Lesson Content

Two aspects of lesson content were analyzed in the four textbooks. First, we examined each lesson to determine the presence of *lesson objectives*. When objectives were stated, we computed the number of (a) objectives, (b) objectives that were clear with respect to student outcomes, and (c) objectives that fostered higher level applications of the content. Next, *lesson content* was evaluated to determine the presence or absence of salient features before, during, and after phases of instruction. Evaluation of the before instruction phase included determining whether the lesson provided an explicit purpose, a preview or overview of relevant information, and a review of key vocabulary. The during instruction phase was evaluated for the presence of teacher explanations, guided practice, and independent practice activities. The after instruction phase was examined for an explicit summary of key ideas. In addition, any suggestions for accommodating diverse learners were noted.

Training and Reliability.

The evaluators met in a training session with the first author for approximately three hours prior to initiation of data collection. Following this training session, interrater agreement was. computed between each evaluator and the first author. Reliability was calculated as the number of agreements divided by the number of agreements and disagreements and multiplied by 100 with all reliability estimates above 90%.

As a further check on reliability, the second author (Nolet) and a graduate student at Western Washington University independently evaluated all dimensions (described above) of the lessons in each of the four textbooks. On three lessons rated by both of these two individuals, interrater

agreement was above 92% on all dimensions. Rates of agreements between the Western Washington University and Lehigh University evaluators on all other lessons were at or above 85%. The high rates of agreement among evaluators working at the same site (Lehigh, or Western Washington University) and between evaluators working at the two different sites support the reliability of the coding system.

Results

The total and mean numbers of Facts, Concepts, and Principles, as well as total words and readability are shown in Tables 1. We also computed mean values for each of the dimensions shown in Table 1. For example, the mean number of words across all lessons examined in the Glencoe textbook was 1783. We calculated the relative proportions of knowledge forms (facts, concepts, and principles) in each chapter based on the total number of all knowledge counted in a chapter. For example, in the Glencoe textbook, 95.9% of all knowledge forms tallied were facts and 4.1% were concepts. Finally, we estimated the "density" of knowledge forms in the lessons by dividing the mean number of words by the mean number of each knowledge form. This value provides a rough estimate of how often a reader would encounter the particular knowledge form, expressed in number of words. For example, a student reading the Glencoe textbook would encounter a fact every 13.9 words, and a concept every 323.8 words.

Table 2 shows the results of the analysis of intellectual operations in the textbooks. As can be observed in the table, 60.2% of the intellectual operations were found to be lower level operations (e.g., reiteration and summarization), while 39.8% represented higher level manipulations (e.g., illustration, prediction, application, and evaluation). With the exception of Prentice Hall, the majority (more than 50%) of operations in the remaining three programs entailed lower level operations of reiteration and summarization. The mean percentage for reiteration and summarization items in Prentice Hall was 48.5%. When the mean percentage of higher level operations was examined, the most common item types included application of knowledge (23.3%). These items comprised 31.8%, 26.6%, and 12.5% in Prentice Hall, Silver Burdett and Ginn, and Glencoe, respectively. For Holt Rinehart and Winston, prediction items (15%) were the highest. Evaluation (9.7%) or prediction (5.8%) item types were the next highest across all programs. Holt Rinehart and Winston and Prentice Hall contained no items related to illustration. In addition, the mean percentage of illustration items was relatively low (0.2%) in both Glencoe and Silver Burdett and Ginn.

Objectives

Results of the analysis of lesson objectives are shown in Table 3. None of the textbooks included more than 5 or objectives for a chapter and 100% of these included clearly stated expectations for student outcomes. Silver Burdett and Ginn contained the most number of objectives (mean = 4.2) followed by Glencoe, Prentice Hall, and Holt Rinehart and Winston with a mean of 2.8, 2.4, and 2.2, respectively. In general, fewer than half of the objectives included in the lessons required students to engage in complex thinking. For example, 29% percent of the objectives required complex thinking in the Glencoe text. This value was 27% in the Holt Rinehart Winston text, 63% in the Prentice Hall text, and 48% in the Silver Burdett text.

Instructional Dimensions

We observed considerable variability across textbooks with respect to inclusion of the instructional dimensions examined. However, with three exceptions, we found no variability within textbooks across lessons. If a textbook included any of the dimensions, the dimension was included for all lessons examined. One exception to this finding was in the Holt-Rinehart-Winston textbook, where we found that suggestions for independent practice in two of the five lessons analyzed. The other two exceptions were in the Silver-Burdett book, where we found vocabulary was pre-taught in one of the five lessons examined and an effective summary was included in three of the five lessons examined. The results of this analysis are shown in Table 4.

As the table shows, only the Prentice Hall text included all of the instructional elements examined and none of the instructional elements was present in all of the lessons examined. Also, the Glencoe textbook was the only one that provided suggestions for diverse learners (100%) and we found these suggestions for each lesson.

Discussion and Implications

The goal of understanding textual information is considered by many to be important in enhancing student achievement. Furthermore, the goals of geography instruction should equip students with the necessary background knowledge to understand about issues and far-off places and provide them with information about the world they live in as well as require them to engage in higher order thinking skills. As such, the evaluation criteria we presented here may serve as a guideline for the important decisions teachers must make in selecting curricula that meet individual learner needs and modifying or supplementing content to promote student learning.

It seems clear that these texts would pose a significant challenge for students who enter middle school with reading skills below grade level or for students who speak English as a second language. For example, although the books are intended for middle school students, their readability tends to be around the 10th grade level. Indeed, only one of the textbooks provided specific suggestions for the teacher to accommodate diverse learners.

Readability data must be interpreted with caution. Considerable variability can be found across readability formula and certainly the presence of geographic vocabulary, particularly place names, would be expected to increase reading difficulty. Further analysis of these texts with multiple readability formula would be necessary to make definitive conclusions about the reading difficulty of these texts.

The textbooks varied in the extent to which they prompt students to engage in complex thinking associated with geography, a domain in which many problems are ill-structured. To solve ill-structured problems, students need domain specific knowledge that consists of a variety of facts, concepts, and principles related to geographic processes in specific contexts. They also need general problem solving routines and practice using higher-order thinking in multiple contexts, using a variety of sources of information (Bransford, Sherwood, Vye, & Rieser, 1986).

The textbooks we examined failed to provide either of these types of information. The texts were dense with facts but contained few concepts or principles and students were to reiterate or summarize information more often than they are asked to illustrate, predict, evaluate, or apply information.

The density of facts in these textbooks is further disturbing given the paucity of conceptual or principle knowledge they actually taught. While these curriculum materials *mentioned* many concepts, and *implied* many rules or principles, they failed almost completely to *teach* concepts or principles. The textbooks in our study taught fewer than four concepts per chapter and less than one principle per chapter. Indeed, while all of the texts included clearly stated expectations for student performance, few of the instructional objectives listed in the texts addressed students' use of complex thinking with concepts or principles

Finally, one of the clear messages emerging from the standards-based reform movement is that the pedagogic as well as domain-specific knowledge associated with teaching has increased drastically. Teachers must have a deep understanding of their content area to adequately prepare their students to engage in the kind of complex thinking and problem-solving required on the standards-based assessments being implemented in most states. In addition, teachers also must have a large repertoire of effective teaching strategies to be able to adequately help all of their students meet the new standards. It is clear that the textbooks we analyzed provided little support for teachers in either of these areas. The textbooks provided some support for teachers to prepare effective instruction for all learners; however, the books were inconsistent in the kinds of support they provided. The inconsiderate nature of the text in these books would require a teacher to make significant enhancements and accommodations for learners who have reading difficulties. At the same time, the density of facts in these lessons would require a teacher to have a fairly deep understanding of the nature and goals of geography to avoid teaching this material as an unconsolidated morass of minutia.

References

Ainsley, W. F., Bass, H. J., Cooper, K. S., Crump, C., Elbow, G. S., Erikson, R., Fleming, D. B., Greefield, G. M. Greenow, L., Joyce, W. W., Ludwig, G. S., Petrovich, M. B., Pounds, N. J. G., Roberts, A., Roberts, C. L., Rouse Jr. P., Slayton, Jr. P. C., & Toppin, E. A. (1995). World geography. Morristown, NJ: Silver Burdett and Ginn.

Baerwald, T. J., & Fraser, C. (1995). World geography: A global perspective. Englewood Cliffs, NJ: Prentice Hall.

Bloom, B. S., Engelhart. M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). Taxonomy of educational objectives: Cognitive domain. New York: Longman.

Boehm, R. G., Armstrong, D. G., & Hunkins, F. P. (1996). Geography: The world and its people. New York, NY: Glencoe McGraw-Hill.

Bransford, J., Sherwood, R., Vye, N., & Rieser, J. (1986). Teaching thinking and problem solving. American Psychologist, 41(10), 1078-1089.

Council of the Great City Schools (1996). Becoming the Best: Standards and Assessment Development in the Great City Schools. Washington D.C.: Author.

Courtland, M. C., Farr, R., Harris, P., Tarr, J. R., & Treece, L. J. (1983). A case study of the Indiana state reading textbook adoption process. Unpublished manuscript, Indiana University, Bloomington.

Helgren & Sager (1995). World geography today. Orlando, FL: Holt Rinehart & Winston.

Powell, D. A. (1986). Selection of reading textbooks at the district level: Is this a rational process? Book Research Quarterly, 1, 23-35.

Tindal, G. R., & Marston, D. (1990). Classroom-based assessment: Evaluating instructional outcomes. Columbus, OH: Merrill.

Tulley M., & Farr, R. (1985). The purpose of state level textbook adoption: What does the legislation reveal? Journal of Research and development in Education, 18, 1-6.

Tyson, H., & Woodward, A. (1989). Why students aren't learning very much from textbooks. Educational Leadership, 49(3), 14-17.

Table 1

Readability, Total Words, and Knowledge Forms in Selected Lessons of Four Geography Textbooks

Publisher	Readability	Words	Facts	Concepts	Principles
Glencoe					
China	11.5	677	45	2	0
India	9.3	885	65	4	0
Russia	9.5	816	46	4	0
S.E Asia	10.3	1344	134	3	0
West Indies	9.8	1783	107	4	0
Mean	10.08	1101	79.4	3.4	0
Proportion			95.9	4.1	0.0
Density			13.9	323.8	-
Holt Rinehart					
China	12.5	1823	143	3	0
India	8.9	483	24	0	0
Russia	8.5	1058	35	2	1
S.E Asia	12.6	606	50	1	0
West Indies		1503	63	6	0
Mean	10.625	1094.6	63	2.4	0.2
Proportion			96.0	3.7	0.3
Density			17.4	456.1	5473
Prentice Hall					
China	9.4	1794	84	4	0
India	8.5	1887	46	3	0
Russia	10.3	1543	36	6	0
S.E Asia	11.3	2308	164	1	0
West Indies	13.0	1532	52	2	1
Mean	**10.5**	**1812.8**	**76.4**	**3.2**	**0.2**
Proportion			**95.7**	**4.0**	**0.3**
Density			**23.7**	**566.5**	**9064**
Silver Burdett					
China	13.9	1962	109	3	3
India	8.5	1854	90	3	0
Russia	11.5	1811	46	6	0
S.E Asia	7.41	1172	77	2	0
West Indies	9.41	1484	81	2	1
Mean	**10.2**	**1656.6**	**80.6**	**3.2**	**0.8**
Proportion			**95.3**	**3.8**	**0.9**
Density			**20.6**	**517.7**	**2070.8**

Table 2

Intellectual Operations in Selected Lessons of Four Geography Textbooks

Publisher	Reiterate	Summarize	Illustrate	Predict	Evaluate	Apply
Glencoe						
China	2	3	0	0	1	0
India	7	0	0	0	0	0
Russia	5	0	0	1	2	0
S.E Asia	1	0	1	1	0	1
West Indies	11	1	0	0	2	1
Mean	**5.2**	**0.8**	**0.2**	**0.4**	**1.0**	**0.4**
Proportion	**0.65**	**0.1**	**0.025**	**0.05**	**0.125**	**0.05**
Density	**211.7**	**1376.3**	**5505.0**	**2752.5**	**1101.0**	**2752.5**
Holt Rinehart						
China	2	0	0	1	0	0
India	0	2	0	0	0	1
Russia	2	2	0	2	0	0
S.E Asia	1	1	0	0	1	1
West Indies	0	3	0	0	0	1
Mean	**1.0**	**1.6**	**0.0**	**0.6**	**0.2**	**0.6**
Proportion	**0.250**	**0.40**	**0.0**	**0.15**	**0.05**	**0.15**
Density	**1094.6**	**684.1**	**0.0**	**1824.3**	**5473.0**	**1824.3**
Prentice Hall						
China	1	2	0	0	4	1
India	4	1	0	1	6	2
Russia	8	0	0	1	6	2
S.E Asia	5	4	0	2	3	0
West Indies	2	5	0	1	2	3
Mean	**4.0**	**2.4**	**0.0**	**1.0**	**4.2**	**1.6**
Proportion	**0.30**	**0.18**	**0.0**	**0.08**	**0.32**	**0.12**
Density	**453.2**	**755.3**	**0.0**	**1812.8**	**431.6**	**1133.0**
Silver Burdett						
China	5	5	1	0	3	0
India	11	2	0	0	4	1
Russia	5	5	0	1	9	1
S.E Asia	5	2	0	1	3	0
West Indies	5	3	0	0	2	5
Mean	**6.2**	**3.4**	**0.2**	**0.4**	**4.2**	**1.4**
Proportion	**0.39**	**0.22**	**0.01**	**0.03**	**0.27**	**0.09**
Density	**267.2**	**487.2**	**8283.0**	**4141.5**	**394.4**	**1183.3**

Table 3

Analysis of Objectives in Selected Lessons of Four Geography Textbooks

Publisher	Objectives Present?	Outcomes Stated?	Complex Thinking?
Glencoe			
China	3	3	1
India	3	3	1
Russia	3	3	0
S.E Asia	2	2	2
West Indies	3	3	0
Mean	**2.8**	**2.8**	**.8**
Holt Rinehart			
China	2	2	0
India	3	3	1
Russia	2	2	0
S.E Asia	2	2	1
West Indies	2	2	1
Mean	**2.2**	**2.2**	**.6**
Prentice Hall			
China	2	2	0
India	2	2	1
Russia	2	2	2
S.E Asia	3	3	2
West Indies	3	3	1
Mean	**2.4**	**2.4**	**1.5**
Silver Burdett			
China	4	4	2
India	4	4	2
Russia	5	5	2
S.E Asia	4	4	2
West Indies	4	4	2
Mean	**4.2**	**4.2**	**2**

Table 4

Instructional Dimensions in Selected Lessons of Four Geography Textbooks

Instructional Variable	Publisher			
	Glencoe	Holt Rinehart	Prentice Hall	Silver Burdett
Before Instruction				
Purpose	No	No	Yes	No
Preview	Yes	No	Yes	No
Vocabulary	Yes	Yes	Yes	Yes in 1/5
During Instruction				
Teacher's Directions	No	No	Yes	No
Guided Practice	Yes	Yes	Yes	No
Independent Practice	Yes	Yes in 2/5	Yes	Yes
During Instruction				
Summary	Yes	No	Yes	Yes in 3/5
Suggestions for Diverse Learners	Yes	No	No	No